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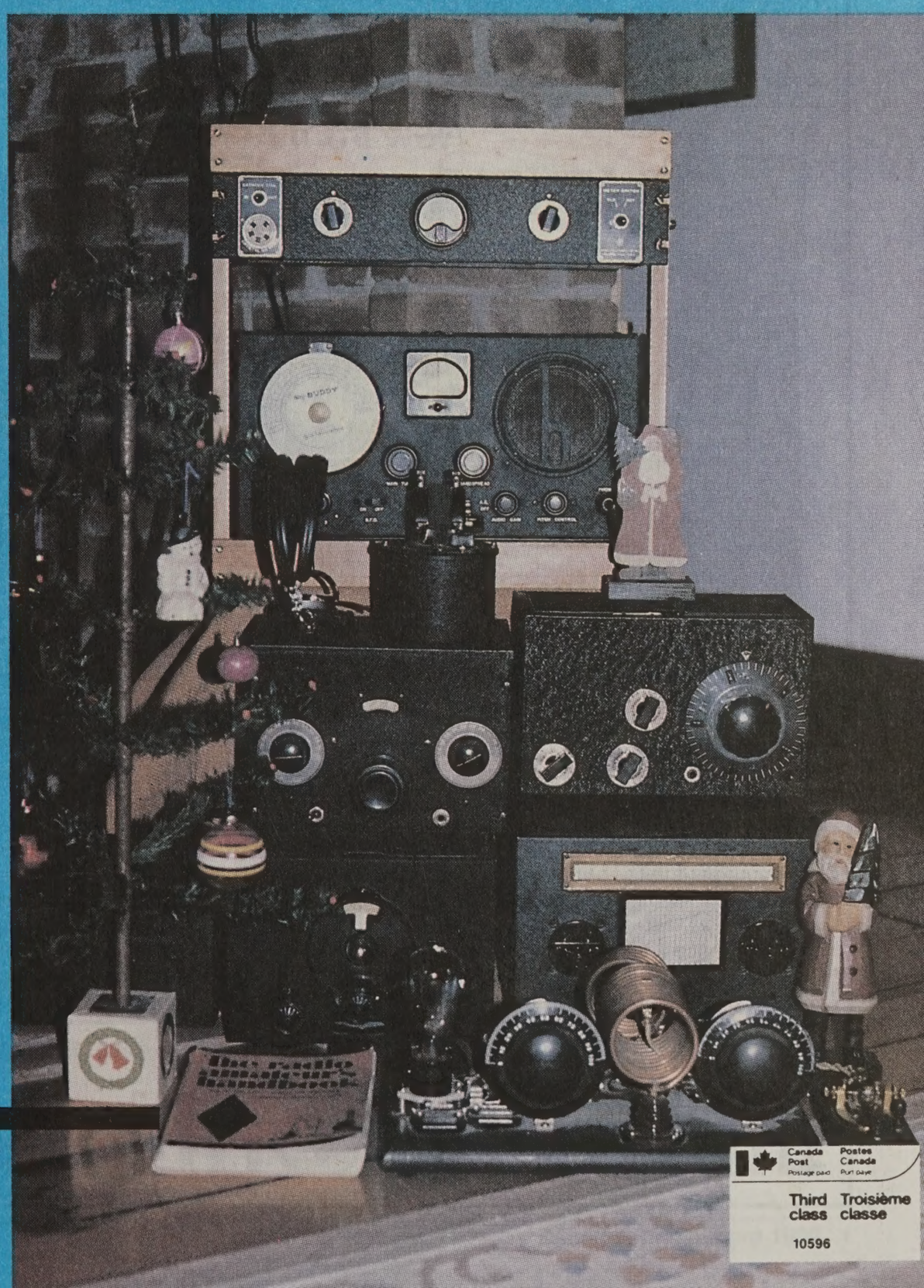

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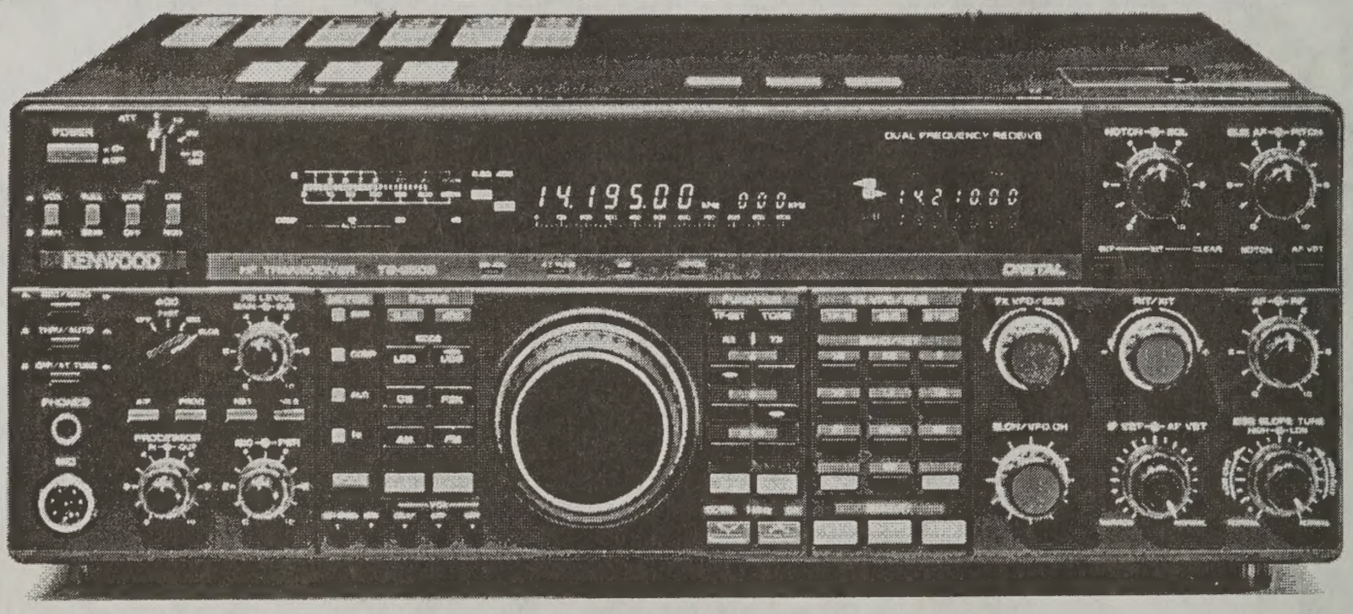

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QST CANADA

QST Canada (ISSN 0840-1670) is published monthly by CRRL Publishing, Inc., to provide radio amateurs, others interested in radio communications and electronics, and the general public with information related to the science of Amateur Radio communications.

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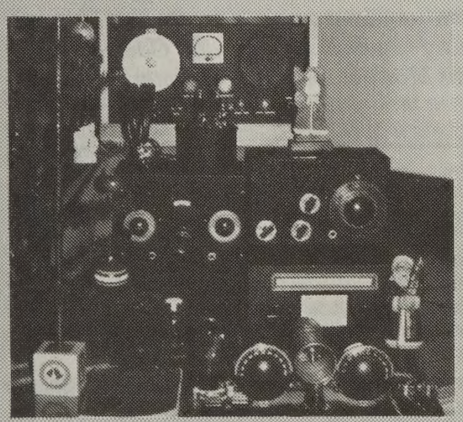


Amateurs 50–60 years ago might have looked for these under their Chrismas trees. Can you identify the National SW-3, FB7X, and 1–10, the Gross *Eagle*, the Hallicrafters *Sky Buddy*, the Millen exciter, and the 1929 Hartley TX? ■

It Seems to Us... /Il nous semble...

Nostalgia

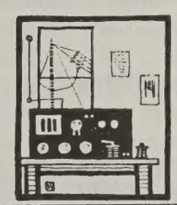
Quick! How many controls are there on the front panel of a TS-940S?

The Kenwood engineer at this year's Dayton Hamvention® couldn't tell us, and you probably don't know either, but you'd probably agree that there are lots.

That's the way Amateur Radio has been headed for many years now. More and more complex. So complex that most of us can't even service the equipment we use. We have to send it out for repair!

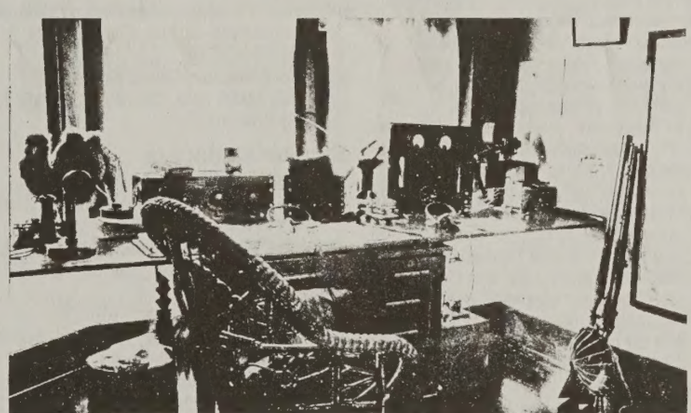
Lately, however, another trend has been setting in. While many of us still yearn for rigs with the latest bells and whistles, some of us are saying, "Enough! We just want a rig with a few simple controls. After all, we just want to talk to people!" Many manufacturers are now supplying such rigs.

It Seems... continued on page 20
Canadian Stations continued on page 17



Amateur Radio Stations

Some Prominent Canadian Stations



9BP, PRINCE RUPERT, B. C.

Everyone will recall 9BP as being the station that has maintained regular working schedules with WNP for the past two months while the "Bowdoin" lies frozen in the ice, 2000 miles to the northwest of Prince Rupert. To better fix 9BP's location in your mind, Prince Rupert is the western terminus of the Canadian National Railways and is situated on the coast 500 miles north of Vancouver, B. C.

Jack Barnsley, the owner and operator, reservedly assures us that 9BP is not a wonder station. It's many good DX records speak for themselves, however. The best transmission, prior to working WNP, was to Canadian 3NI, Ft. Williams, Ont. Mr. Barnsley also has a card from Ithaca, N. Y., reporting his signals and has worked stations as far south as 6ZH, near the Mexican border. 9BP has been the western terminus for several all-Canadian trans-continental relay tests and it was on one of these occasions that a message was sent from Prince Rupert at midnight and an answer received back from Toronto in six minutes! Being the only relay station for many hundreds of miles around, 9BP is due to become a strong link in future relay routes to Alaska.

The transmitter will be recognized as being a duplicate of 6ZAC's old transmitter that was described in the May, 1922, issue of *Radio*. Two 50-watt tubes are

Jack Barnsley

used in a full-wave rectification circuit with 1500 volts on the plates. The reversed feedback circuit is used instead of the Hartley circuit employed in 6ZAC's transmitter. The present antenna current is only three amperes but efforts are be-

Letters/Lettres

Conducted By Harry MacLean, VE3GRO

All letters will be considered carefully. Letters are edited and may be condensed in order to have more information and readers' views presented. The publishers of *QST Canada* assume no responsibility for statements made by correspondents.

THE XYL

❒ *The following was received by Garry Hammond, VE3XN, in response to his column in 1989 October* QST Canada.

I too am an XYL with three roles to play...

First, as "wife" with all the regular duties plus a full-time job. Meals and sleep are often interrupted or late because I am net control, I have traffic to handle, I'm speaking to a public service organization about emergency communications, training ECs, going to or speaking at a radio club meeting, giving exams, or just plain being on the air!

My second role as hostess is to have eyeballs with amateurs I have met on the air, to host training sessions, to provide encouragement to prospective amateurs, to compare notes with fellow amateurs on QRP wire antennas, emergency communications, net operations, DXing, new equipment, old equipment, and more.

My third role is as an *amateur.* I am net manager and net control, a Section Emergency Coordinator and a volunteer examiner. I'd likely be on the air any hour of day or night. I like to think that someday I'll have the time to build my own linear amplifier and, maybe just for fun, a spark transmitter. It has taken me a few years, but I have passed the seven exams necessary to obtain my Extra Class license—the highest in the US.

Mrs Munroe may be content as an XYL and "unofficious ham", but I prefer to be known as KA8UVQ! —*Sally J Dawson, KA8UVQ/VE1, Shelburne, Nova Scotia*

❒ I was pleased to read "The XYL" in October *QST Canada.* This past July, my wife, my daughter and I were recipients of Mamie Munroe's hospitality in Hay River, NWT. I had been talking to Stu on the Hay River repeater when he invited us over for a cup of tea.

When we got to VE8CM, Stu was in the shack on a long-distance phone call, so we waited upstairs in the kitchen. In walked Mamie, arriving home from work. "You must be a ham radio operator," she said, fully accustomed to finding vehicles with antennas on them in her driveway, and strangers in her kitchen. Well, the cup of tea turned into supper with the Munroe family, and a thoroughly enjoyable visit.

Thanks again, Mamie, and the three of us certainly enjoyed your article. —*Carl, VE1UU, XYL Kathy and Abby Anderson, Dartmouth, Nova Scotia.*

NO ONTARIO 220-MHz GRAB

The following was received by David Wessel, VE3LMU, President, Amateur Radio Society of Dryden, in response to an inquiry about a report that the Ontario government was interested in the 220-MHz band:

I am writing in response to your letter regarding the possible loss of radio spectrum available to Amateur Radio. As Ontario has no authority with respect to allocation of the radio spectrum, I am unaware of the issue to which you refer. Further, staff of my ministry have consulted with the federal Department of Communications, which is responsible for such matters, and have found no immediate proposals or plans to make changes to the 220-MHz radio band.

I thank your members for their continued service to the community, and wish them continued success in the future. —*Lily Munroe, Culture and Communications Minister, Province of Ontario* ■

The Canadian Radio Relay League, Inc
La Ligue Canadienne de la Radio Amateur, Inc

The Canadian Radio Relay League (CRRL) is a noncommercial association of radio amateurs organized for the promotion of Amateur Radio communications and experimentation, for the establishment of networks to provide communications in the event of disasters or other emergencies, for the advancement of the radio art and the public welfare, for the representation of radio amateurs in legislative and other matters, and for the maintenance of fraternalism and a high standard of conduct.

CRRL is incorporated under the Canada Corporations Act. Its affairs are governed by a seven-member Board of Directors elected every two years by the CRRL general membership. CRRL is noncommercial, and no one who could gain financially by the shaping of its affairs is eligible for membership on its Board.

CRRL is the Canadian member-society of the International Amateur Radio Union (IARU). "Of, by and for the Canadian Radio Amateur", CRRL numbers within its ranks the vast majority of active amateurs in the nation and has a proud history of achievement in amateur affairs.

A bona fide interest in Amateur Radio is the only essential requirement for membership. An Amateur Radio licence is not required, although full voting membership is granted only to licensed amateurs in Canada.

Membership inquiries and general correspondence should be directed to CRRL Headquarters, Box 7009, Station E, London, ON N5Y 4J9 (519) 660-1200.

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Calendar

Attention: Deadline for items is the 1st of the second month preceding the month of publication. For example, information would have to reach *QST Canada* by January 1 to be included in a March issue.

Canada Winter Contest: 0000–2400 UTC, Saturday, December 17. Sponsored by the Canadian Amateur Radio Federation (CARF). Object of contest: to work as many stations—particularly Canadian stations—as possible in a 24-hour period. Scoring: 20 points for contacts with CARF stations using TCA/VCA call signs, 10 points for other Canadian contacts, and 4 points for US or DX contacts. Multipliers: each province or territory on each band and each mode. Send copy of log to Jeff Parsons, VE6CB, R. R. 1, Oxford Mills, ON K0G 1S0. ■

A 50-Ohm Noise Bridge for Antenna Tuners

No need to QRM. Tune up *before* going on the air!

By Kevin Denike, VE6HA
Box 674
Cochrane, AB T0L 0W0

Here is an interesting project that is less expensive than an automatic antenna tuner and almost as easy to operate! It will help you adjust your antenna tuner so it presents a 50-ohm load to your transmitter—and do it a lot easier and faster than using an SWR meter. It can also be used to measure the resonant frequency of your antenna—a great help when you are first setting up.

Concept

This project is a combination of the Palomar "Tuner Tuner" and the ARRL "Impedance Bridge". An internally generated wideband RF signal ("noise") is introduced into two arms of a modified Wheatstone bridge through a toroidal transformer. One arm has a 50-ohm fixed reference resistor in it, and the other arm is connected to the antenna system via the antenna tuner. The receiver antenna input (or input/output of a transceiver) is connected between the arms of the bridge. As long as the arms have a different impedance, the wideband RF signal will be detected by the receiver and the S-meter will deflect. When the arms have the same impedance (50 ohms), the RF signal from the bridge will disappear.

Operation

The bridge is placed in the antenna line between the receiver (or transceiver) and the antenna tuner. To operate, simply turn on the bridge and adjust the antenna tuner until the receiver S-meter dips and the noise level is at a minimum. Turn off the bridge and get ready to transmit. You now have the lowest possible SWR without ever having put a signal on the air.

If you want to find the resonant frequency of an antenna, connect the antenna directly to the bridge. Turn on the bridge and tune your receiver up and down the band. The S-meter will dip at the antenna's resonant frequency.

Circuit Description

U1 and associated components generate a 1000-Hz signal voltage that is applied to Zener diode D1. D1 then produces a wideband RF signal (noise) that is amplified by Q1 and Q2, and introduced into the primary of T1 (1,6). T1 secondary (2,4) and the 50-ohm reference resistor (R9 and R10 in parallel) form one arm of the bridge circuit. T1 secondary (3,5) connects to the tuner and antenna to form the second arm of the bridge. When both arms have equal impedance (as a result of adjusting the antenna tuner), no RF signal ("noise") flows from the centre of the secondaries (2,5) to the receiver. Switche S1a–c turns off the bridge and disconnects it from the antenna system so you can transmit. F1 is a safety precaution. It will protect your bridge if you inadvertently transmit without turning the bridge off.

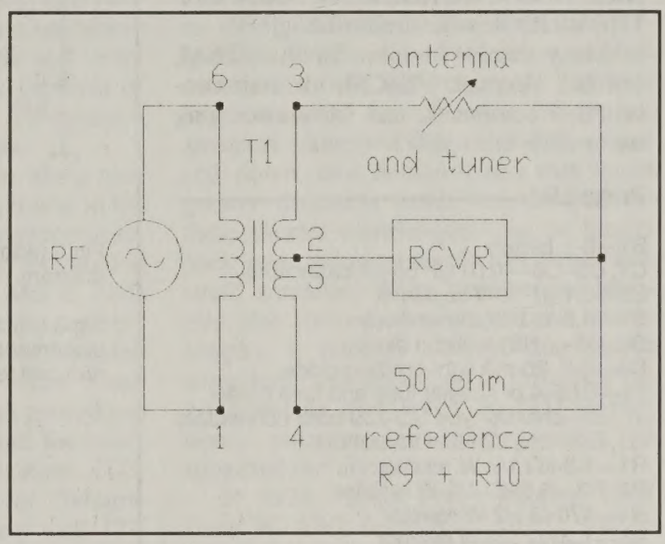

Fig 1—Wheatstone bridge block diagram.

Construction Notes

The bridge can be built into your rig or antenna tuner, or in a stand-alone cabinet. Switch S1a–c forms part of the transmission line on transmit, so it must be capable of handling the power output of your rig. Wiring between the switch and antenna connectors J1 and J2 must be short and direct, #18 or heavier.

Circuit Board

Carving copper islands on the foil side of a circuit board is much quicker than etching, particularly when only one board is required. Tape the layout (Fig 3) of the foil side onto the copper foil—with a piece of carbon paper sandwiched between the layout and the foil. Centre punch all hole marks through the layout and onto the board. Trace all lines onto the foil. Remove the layout and carbon paper, and go over the traced lines with an engraving bit. A dentist's bit or a Dermel carving bit is great for removing the copper foil. Be sure to wear eye protection. Shine a bright light through the board to check that all the copper has been removed from the lines. Check with an ohmmeter for "bridges" between sections. Use a #56 or 1/16-inch bit to drill holes for the components and the four mounting holes in the corners. To facilitate soldering, it is a good idea to "tin" the board by applying a bit of solder around each hole before mounting any components.

Toroidal Transformer

Cut a 915-mm (36-inch) length of #26 enamelled copper wire into three equal lengths 305-mm (12-inches) long. Twist three of the ends together and secure them in a vice. Wrap a piece of tape around the three loose ends and insert them into the chuck of an electric drill. Pull the wires tight to remove any slack, and then with a series of short, quick trigger pulls, try for six to eight twists per inch. Or you can make a loop in the loose end, put a screwdriver through the loop, and manually twist the wires. Wrap this "three-wire cable" around the Amidon toroid core eight times. Scrape the enamel off all wire ends, and with an ohmmeter, establish which wire is which. Label the ends of the wires 1 and 6, 2 and 5, 3 and 4. Arrange the wires so 1 and 6, 2 and 5, and 3 and 4 are opposite to each other. Coat the entire assembly with a liberal application of clear nail polish to keep everything in place.

Assembly

Install and solder all components as shown in Fig 4, the parts placement diagram. Connect the switch wires and route the LED and its wiring to the front panel near

the switch. Install the coaxial cable connectors and the fuse holder on the rear panel. The nine-volt battery can be mounted inside the cabinet or on the rear panel.

Some Final Notes

When the antenna tuner is adjusted to 50 ohms, the RF signal from the bridge will fade to zero and background signals *can* be detected. Without the Zener noise signal to remind you that the bridge is still in the line, you may accidentally transmit while the bridge is turned on. Unless you have a source of large quantities of fuses at a low price, DON"T FORGET TO TURN OFF THE BRIDGE when transmitting!

Many thanks to John Smith, VE6AI, and Bill Herman, VE6CSI, for their construction comments, and for encouraging me to write this up!

Parts List

B1—9-V battery
C1, C3–C6— 0.01-µF 50-µF capacitors
C2—0.1-µF 50-V capacitor
D1—6.8-V, 1-W Zener diode
D2, D3—1N914 silicon diodes
D4—2-V, 20-mA light-emitting diode
F1—0.05-A or smaller fuse and fuse holder
J1, J2—chassis-type SO-239 coax connectors
Q1, Q2—2N222 NPN transistors
R1—1.8-kΩ 1/2-W resistor
R2, R3—6.8-kΩ 1/2-W resistor
R4—470-Ω 1/2-W resistor
R5—1.2-kΩ 1/2-W resistor
R6—680-Ω 1/2-W resistor
R7—22-kΩ 1/2-W resistor
R8—10-kΩ 1/2-W resistor
R9, R10—100-Ω 1/2-W resistors
S1a–c —3PDT switch (see Note below)
T1—transformer on an Amidon FT-37-43 core
U1—NE555 integrated circuit
miscellaneous—8-pin DIP socket for U1, 915 mm (3 feet) #26 enamelled copper wire, battery holder and connector, switch knob

Note: For readers deeply concerned with impedance matching, switch S1a–c should probably be a ceramic wafer type. However, the author assures us that a miniature 3PDT general-purpose lever switch works just fine. A final note: VE6HA's full-size diagrams for this article are available. Send an SASE to George Murphy, VE3ERP, 1095 Mississauga St W, Orillia, ON L3V 6W7 —*Editor* ■

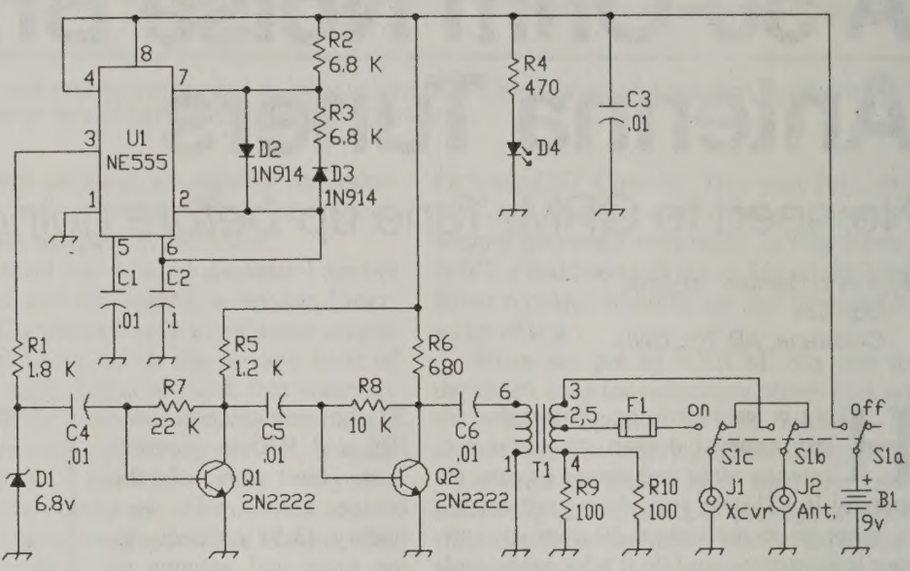

Fig 2 (above)—Circuit diagram.

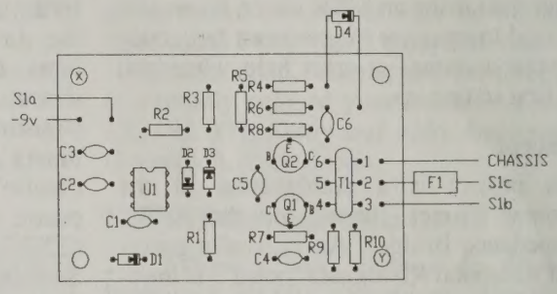

Fig 3 (right)—Parts placement (plain side, reduced to 50%).

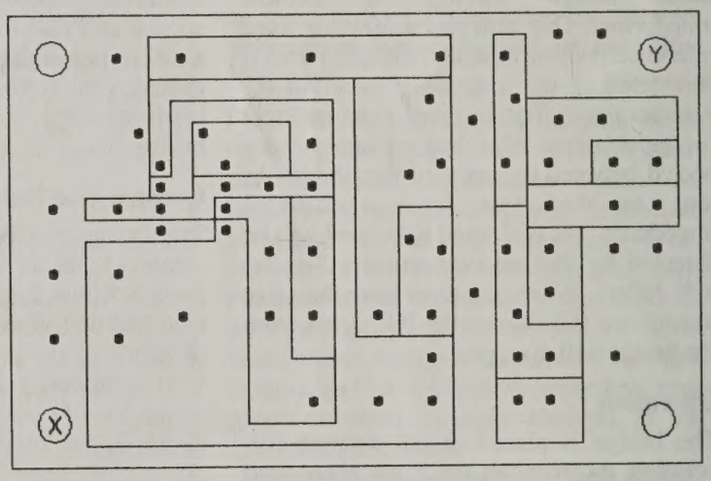

Fig 4 (right)—Parts placement (foil side, full-size for use with carbon paper.

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IARU

Everything you need to know before WARC '92...

By George Spencer, VE3OZW
R R 1
Jordan, ON L0R 1S0

From time to time we amateurs read or hear about the International Amateur Radio Union (IARU), and it seems to be some obscure and far-off thing having little to do with the subjects that interest us in our pursuit of happiness via Amateur Radio.

But IARU is important. It operates on a global basis and is instrumental in establishing internationally agreed-to rules, methods of operation, and band plans. Amateurs learn early in the game that there are QSL Bureaus and certificates for Worked All Continents (WAC). But most don't realize that these are actually examples of services and benefits arranged by IARU. Indeed, our assigned frequencies, without which Amateur Radio would not exist, are a direct and tangible result of the efforts of IARU on behalf of all amateurs.

The IARU has two main levels. There are (1) the world-wide organization consisting of the Administrative Council (its members are chosen at large), and the International Secretariat (the IARU member-society that agrees to do the bookwork: at the moment, this is ARRL), and (2) the three regional organizations:

Region 1: Europe, Africa, and nearby islands,

Region 2: North and South America, and nearby islands,

Region 3: the rest of the world

IARU is structured much like the International Telecommunications Union (ITU). To understand IARU and how it operates, it is helpful to know something about the ITU.

The ITU: Mainly Historical

ITU began over a century ago as the International Telegraphic Union. This resulted from the invention of the telegraph in 1843 by Samuel Morse. The telegraph became a worldwide reality only a few years after its invention, and it created many problems, especially in Europe with its many languages in relatively small countries close together.

For many hundreds of years, the educated elite in those countries had communicated the written word in Latin and other common languages. The telegraph created a need for *instant* translation of words and ideas across borders—by literate but not necessarily well educated people. Countries needed to agree on Morse characters for letters, accents and other symbols. This led to the development of the Q-code, still used by commercial interests and by radio amateurs.

Of course when radio came along near the beginning of this century, it was in the form of wideband spark transmissions. There was no such thing as modulation by speech or music, and Morse code filled the requirements of the day, namely to get the written word out over long distances, in this case without wires! Naturally, the standard signals and procedures used in telegraphy also worked for radio, and the international organization, ITU—with the "T" still standing for "telegraphy"—filled radio's needs very well. ITU standards for radio were readily accepted by ITU member-nations and the Q-code was amended to fit some of the peculiarities of radio.

The development of CW gave each station its own frequency, and to prevent chaos, frequency allocation became a function of the ITU. Groups of frequencies, that is bands, were established for specific purposes: commercial radio, navigation aids, broadcasting, and Amateur Radio. Standards were developed relating to frequency stability, different methods of modulation and so on, right up to today's requirements for space communications. Along the way, the name was changed to International Telecommunications Union and after World War 2, it fell under the jurisdiction of the United Nations (UN)—just like many other international organizations: ICAO for air transportation and WHO for world health.

The Constitution of the UN permits only one vote to each member-nation and it is the same with ITU. It does not matter whether a country is large like the United States or the USSR, or small like Luxembourg or an island—possibly having no amateurs at all. If it is a sovereign nation and a member of ITU, it has one vote. There are now over 160 nations in the ITU, and some of them have very little interest in Amateur Radio.

The IARU: Mainly Historical

So where does Amateur Radio fit in? You may have read or heard of Clinton DeSoto's book *200 Meters and Down* written in 1936. The title comes from the frequencies first assigned to amateurs after commercial and governmental interests began to make use of radio. Of course, amateurs pioneered the use of 200 metres and down, and demonstrated that much greater distances could be covered on these shorter wavelengths than on longer ones, even using relatively low power and small antennas. When commercial interests also moved onto the shorter wavelengths, it became obvious that unless something was organized to influence the governments that voted on ITU resolutions, amateurs eventually might be squeezed out altogether.

In 1924, Hiram Percy Maxim, 1AW (later W1AW), founder of ARRL, was on a business trip to Europe. During that trip he met with prominent European radio enthusiasts and discussed the formation of an international amateur radio union. Those enthusiasts were not all licensed amateurs: many European countries did not permit Amateur Radio in those days. However, the meetings did lead to the formation of IARU in Paris in 1925—more than 64 years ago. Canada was one of the twenty-five founding members represented at that historic gathering.

Initially, IARU had individual memberships, but in 1928 the constitution was amended to change to society-membership, one society representing each country. Today, it is quite clear that if that organization had not been formed, Amateur Radio would not exist today, at least not in its present form.

At the founding of IARU, Canadian amateurs were represented by the Canadian Division of ARRL. Because the Canadian Division has since evolved into CRRL, CRRL is the Canadian national society recognized by IARU. This recognition by the worldwide amateur community means that CRRL is a full voting member of IARU, participating in its activities, and sharing its services like the QSL bureau system.

How IARU Operates

If amateurs cannot vote at ITU, and the ITU is the governing body on matters like frequency allocation, how can IARU be effective? The answer can be found in

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A **new** current balun for balanced lines reduces feedline radiation and forces equal currents into antenna halves that are not perfectly balanced for a more concentrated, stronger signal.

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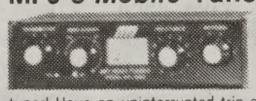
You get MFJ's **new** lighted 2-color **peak** and average reading Cross-Needle SWR/Wattmeter, dummy load, antenna switch, and 4:1 balun - all in a compact 10x3x7 inch cabinet. Meter lamp uses 12 VDC or 110 VAC with MFJ-1312.

With MFJ's **deluxe** 300 watt PEP tuner you get an MFJ tuner that has earned a reputation for being able to match just about anything - one that is highly perfected and has years of **proven** reliability.

MFJ's *Mobile* Tuner

MFJ-945C $149



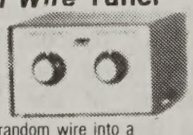
Don't leave home without this **mobile** tuner! Have an uninterrupted trip as the MFJ-945C **extends your antenna bandwidth** and eliminates the need to stop, go out and adjust your mobile whip.

You can **operate anywhere in a band and get low SWR.** You'll get maximum power out of your solid state or tube rig and it'll run cooler and last longer.

Small 8x2x6 inches uses little room. **SWR/ Wattmeter and convenient placement of controls make tuning fast and easy while in motion.** 300 watts PEP output, efficient airwound inductor, 1000 volt capacitors. Mobile mount. MFJ-20.

MFJ's *Random Wire* Tuner

MFJ-16010 $79



You can operate all bands anywhere with any transceiver when you let the MFJ-16010 turn any random wire into a transmitting antenna. Great for apartment, motel, camping operation. Install a wire anywhere! Tunes 1.8-30 MHz. 200 watts PEP. Ultra small 2x3x4 in.

MFJ's *Artificial* RF Ground

$149 **MFJ-931**

You can create an artificial RF ground and eliminate RF "bites", feedback, TVI and RFI when you let the MFJ-931 resonate a random length of wire and turn it into a tuned counterpoise. The MFJ-931 also lets you electrically **place a far away RF ground directly at your rig** -- no matter how far away it is -- by tuning out the reactance of your ground connection wire.

Barefoot/1.5 KW Linear Tuner

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You get MFJ's **new** peak and average reading Cross-Needle SWR/Wattmeter with a **new** directional coupler for more accurate readings over a wider frequency range. It reads forward/reflected power in 200/50 and 2000/500 watt ranges. Meter lamp uses 12 VDC or 110 VAC with MFJ-1312.

Has 6-position antenna switch and a teflon wound balun with ceramic feedthru insulators for balanced lines. 10¾x4½x14 7/8 inches.

MFJ's *smallest* Versa Tuner

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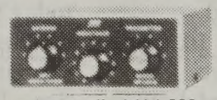

The MFJ-901B is our smallest -- 5x2x6 inches -- (and most affordable) 200 watt PEP tuner --when both space **and** your budget is limited. Good for matching solid state rigs to linears.

It matches whips, dipoles, vees, random wires, verticals, beams, balanced and coax lines from 1.8-30 MHz. Efficient airwound inductor. 4:1 balun.

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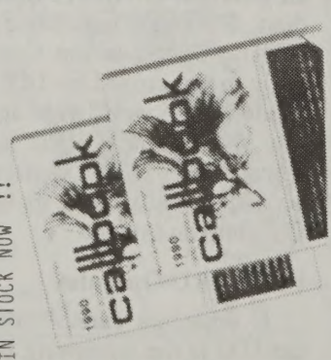

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the operation of consumer, environmental and citizen's groups of all kinds found in a democratic society. IARU is a lobby group like the Consumer's Association of Canada, The Canadian Federation of Small Business, or the Canadian Manufacturer's Association. These special-interest groups know their subject matter very well and give advice to government, acting, of course, in the interests of their members. Some groups are concerned with only domestic matters but many have international interests and try to gain the support of governments at international meetings. At ITU conferences, where IARU maintains a watching brief as an accredited observer, amateurs and others with a stake in telecommunications attend meetings, and advise their governments' delegates of their wishes.

Of course no one, and that means the IARU representatives, goes to any meetings without extensive prior research and study. As a result no one needs to make a sudden decision on some unexpected matter. ITU agendas are published many months and often years in advance. Positions on ITU agenda items that might affect Amateur Radio are ironed out well in advance, first by the IARU member-societies in individual countries, and then internationally, at meetings of the three IARU regions. This part of the process is essential. If amateurs in each country simply went off in their own direction, they could easily persuade individual governments to vote in opposition to each other at ITU meetings. Worldwide Amateur Radio would soon lose out.

Once IARU member-societies have agreed on a common position, it becomes the responsibility of each IARU member-society to obtain the support of its government for that position before actual ITU meetings begin. As in any democratic system, sometimes there is not unanimous agreement on some of the positions adopted by the majority of member-societies in IARU. However, societies which disagree with some or all aspects of a resolution are duty-bound to support the majority IARU position when requesting their government's support at ITU.

Probably the best example of this process in action was at WARC '79, the World Administrative Radio Conference in Geneva where the new amateur bands at 10, 18 and 24 MHz were approved. The well-planned and well-coordinated IARU efforts took many years of mainly voluntary labour (there was also a small amount of paid labour). It was very successful. However, the final cost was substantial: well in excess of 2.5 million dollars US. The really unfortunate part is that, at the time, less than one third of the world's amateurs were members of the IARU member-societies that helped to pay the bills for the advance planning and the lobbying at Geneva—in short, for everything that was necessary to protect, preserve and enhance Amateur Radio for everyone.

WARC '92

The Tenth General Assembly of IARU Region 2 was held in Orlando Florida in September of this year. The most important decision made at this conference was to set in place the basic structure to prepare for a World Administrative Radio Conference (WARC) in 1992. At that conference, it is likely that, once again, non-amateur interests will make a concerted effort to acquire some of our HF, UHF and microwave frequencies. Over the past sixty years, these reviews of frequencies took place every twenty years. The last WARC was in 1979, but now we have another only thirteen years later! It sounds ominous and we do have much work to do before the next Region 2 meeting. Normally these meetings are three years apart but our IARU representatives are now doing their homework and they will probably have to meet late in 1991. In the meantime, there will be general assemblies in IARU Regions 1 and 3, in 1990 and 1991 respectively, and meetings of the IARU Administrative Council.

Who pays for IARU?

Each IARU member-society pays annual dues to its IARU regional organization. In Region 2 it is payable in US dollars. (In Region 1 it is in Swiss francs, in Region 3, in Japanese yen.) In Region 2, dues cover administrative expenses and travel expenses, so the Region 2 Executive Committee can meet once a year as required by the Region 2 Constitution. Additionally, there are expenses incurred to allow two Region 2 representatives to travel to meetings of the IARU Administrative Council, for area meetings to assist less organized societies, and for general expenses related to activities that help protect our amateur interests.

In addition to the Region 2 operating budget which is approved every third year at a Region 2 general assembly, a special initial WARC '92 budget of US $150,000 was approved in Orlando. This money will be over and above the normal dues paid by Region 2 member-societies.

Each Region 2 member-society also pays for its own IARU administrative activity, including expenses to send its voting delegate to the Region 2 general assemblies. Depending on location of host country, airline fares and hotel rates, this costs CRRL about $US 600 per year. Annual IARU membership dues are based on the number of licensed amateurs in each country. Present cost is $US 0.07 per Canadian amateur. This means that dues paid by CRRL for Canadian support of IARU for about 23,500 amateurs, plus the expenses outlined above total about $US 1645 + $US 600 = $US 2245 per year. At the present exchange rate, CRRL's 5500 members are paying about $CDN 0.48 per year to support the work of IARU.

The creation of a single Canadian Amateur Radio society would certainly help. But rebate of our annual license fees paid to DOC—so all Canadian amateurs and not just CRRL members would be supporting IARU—would help a lot more! DOC—are you listening?

George Spencer, VE3OZW, is a former Canadian Division director of ARRL, and a founding director of CRRL. He was head of the Canadian delegation to the recent Tenth General Assembly. of IARU Region 2 held in Orlando, Florida. He and CRRL President Tom Atkins, VE3CDM, have both served as treasurer of IARU Region 2. During the Orlando meeting, Tom was elected secretary of Region 2 and made a member of the nine-person IARU Administrative Council.

Since the formation of the Region 2 organization in Mexico City in 1964, Canadian amateurs have been involved as elected members of the Region 2 Executive Committee. Noel Eaton, VE3CJ was Region 2's first treasurer. He went on to become President of IARU, and led the amateur delegations that worked to get us the three new HF bands—10, 18 and 24 MHz—at WARC '79 in Geneva.

A word about proposals made at IARU general assemblies: Proposals must originate with a society that carries a vote. Only one society is recognized per country. Of interest to members of the Canadian Amateur Radio Federation (CARF), although CRRL and its predecessor, the Canadian Division of ARRL, have been the international representative of Canadian amateurs for some sixty-four years, CARF has not been forgotten. CRRL has invited CARF to supply material for consideration at the last three Region 2 general assemblies. CRRL has also supplied CARF with full reports following each general assembly. This year, for the first time, CARF prepared a submission which CRRL forwarded to the Region 2 General Assembly in Orlando. CARF suggested that bandwidths for digital operation be specified in terms of maximum permitted bandwidth rather than attempting to name each digital mode and assign bandwidth limits. However, a similar proposal had already been submitted by Radio Club Argentino (RCA) before the deadline for translation into Spanish and advance distribution. Because the RCA proposal was so similar to the CARF proposal, it was actively supported by CRRL representatives at the General Assembly, both during Committee B discussions and in the final Plenary Session where the proposal was adopted. ■

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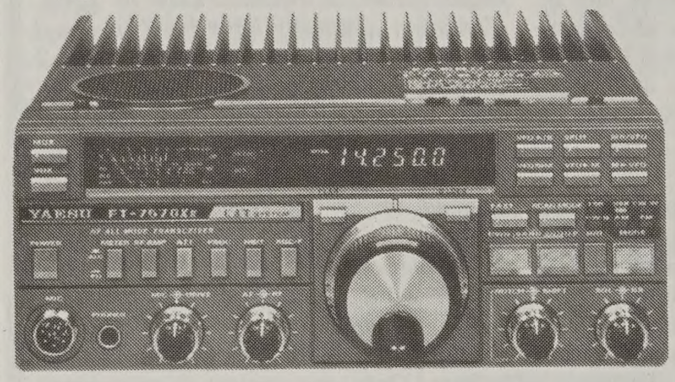

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New *Radiocommunications Act*

On Thursday, October 19, the new *Radiocommunications Act* received royal assent. The *Radiocommunications Act,* which replaces the old *Radio Act,* contains the enabling legislation that allows the Minister of Communications to make regulations. What will change for amateurs? Virtually nothing at this time. All present regulations remain in effect. One new twist: the *Radiocommunications Act* allows the Minister to make regulations governing the RF susceptibility of non-radio devices. That means that the Minister can now make regulations that could prevent the reoccurance of something like the Jack Ravenscroft case. CRRL will be contacting DOC to ask that this become a priority.

Andy Cobham, VE2PPP (centre, turned to the audience), of DOC Ottawa makes a point during the VHF-UHF session at the recent Amateur Radio symposium sponsored by CARF and Scarborough ARC. On the podium: CRRL's Dana Shtun, VE3DSS, who chaired this particular session. *(VE3GRO photo)*

VE1UU NEW CRRL ATLANTIC DIRECTOR

Thanks for a job well done to Andy Mclellan, VE1ASJ, who has advised that for family and business reasons, he is retiring as CRRL Atlantic Director and Manager of the CRRL Central Incoming QSL Bureau. Best wishes to Maritimes-Newfoundland Section Manager Carl Anderson, VE1UU, who has agreed to fill out the remainder of Andy's term as director, and to Don Welling, VE1WF, who has agreed to become manager of the CRRL Central Incoming QSL Bureau.

SYMPOSIUM REPORT

About 45 amateurs attended the DOC Symposium sponsored by CARF, the Canadian Amateur Radio Federation, and Scarborough Amateur Radio Club, held in Toronto on October 21. What was learned? Restructuring of the Amateur Service is on schedule. Amateurs who have passed the theory and regs for the present Amateur Certificate will receive credit in the form of a new Basic qualification when restructuring takes place. In the future, Amateur Radio examinations will be administered by DOC, clubs and specially appointed volunteers. A new RIC-1 will provide the guidelines. DOC values the work of ARES and other Amateur Radio emergency groups, and often mentions Amateur Radio's emergency communications capabilities in memos to other radio services. Unfortunately, it was not all good news. In southwestern Ontario, nearly all commercial frequencies below 890 MHz are loaded to full capacity. As a result, the 220-MHz amateur band may soon come under pressure similar to that in the US.

HOPE YOU DIDN'T MISS IT DEPT

❒ To commemorate Remembrance Day and the 50th Anniversary of Canada's entry into World War 2, members of Guelph Amateur Radio Club operated special-event station VG3W from McCrae House, Guelph, Ontario, on November 10–12. Guelph is the birthplace of Colonel John McCrae who wrote the famous poem, "In Flanders Fields".

❒ To commemorate the 350th Anniversary of Ste-Marie-Among-the-Hurons, the first European settlement in Ontario which was located near present-day Midland, amateurs in Ontario were able to use the special prefix XL3 from October 24 until November 24.

ARRL DXCC/AWARDS UPDATE

❒ Garth Hamilton, VE3HO, CRRL's representative on the ARRL DX Advisory Committee (DXAC) reports that some recent changes to the DXCC rules have created their own problems. These are now being sorted out. DXAC is now voting on possible DXCC status for the following: Austral Island (FO), Marquesas Islands (FO), Conway Reef (3D2), Frederick Reef (VK9), and Banaba/Ocean Island (T33). Other DXCC country applications currently under discussion include Basilica del Santo (HV), Brazilian State Acre (PV), Walvis Bay (ZS1) and Tatoosh and Guemes Islands (W7). Any Canadian amateur with comments on DXCC rules or the DXCC countries list should contact VE3HO at Box 1156, Fonthill, Ontario L0S 1E0.

❒ As a result of a decision at the IARU Region 2 General Assembly, held in Orlando, Florida, in September. ARRL has changed its policy with respect to awards credits on the 10-MHz band. Effective immediately, ARRL accepts 10-MHz contacts for the following awards: WAS (basic, CW, RTTY, packet and QRP, but not for single- or 5-band WAS); and DXCC (CW and digital QSOs for the mixed, CW and RTTY awards, but not for 5-band DXCC). In other ARRL news, W1AW is expected to begin bulletin transmissions on 10.140 and 18.100 MHz soon.

SATELLITE NOTES

❒ The second Japanese Amateur Radio satellite, JAS-1B, is scheduled to be launched in February, 1990. To publicize the launch, Japan Amateur Radio League has established special-event station 8J6JB. Look for 8J6JB on all HF bands, 1400–2000 UTC weekdays, 1400–2200 UTC Saturdays, and 1000–2200 UTC Sundays and holidays.

❒ UoSAT OSCAR 9 went SK on Friday, October 13, falling out of orbit after eight years and some 45,000 revolutions around the earth. UoSAT Oscar 9, whose "digitalker" played a key role in the Canada-USSR Polar Skitrek Expedition, was last heard by ZS6CCD at 1200 UTC.

CRRL AMATEUR OF THE YEAR

Nominations are still open for this award. Send nominations and supporting documentation to CRRL, Box 7009, Station E, London, ON N5Y 4J9. ■

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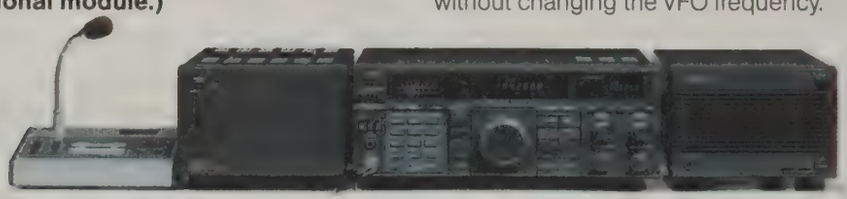
The new Kenwood TS-790A VHF/UHF all-mode tri-band transceiver is designed for the VHF/UHF and satellite "power user." The new TS-790A is an all-mode 144/450/1200 MHz transceiver with many special enhancements such as Doppler shift compensation. Other features include dual receive, automatic mode selection, automatic repeater offset selection for FM repeater use, VFO or quick step channel tuning, direct keyboard frequency entry, 59 memory channels (10 channels for separate receive and transmit frequency storage), multiple scanning and multiple scan stop modes. The Automatic Lock Tuning (ALT) on 1200 MHz eliminates frequency drift. Power output is 45 watts on 144 MHz, 40 watts on 450 MHz, and 10 watts on 1200 MHz. (The 1200 MHz section is an optional module.)

- **High stability VFO.** The dual digital VFOs feature rock-stable TCXO (temperature compensated crystal oscillator) circuitry, with frequency stability of ±3 ppm.
- **Operates on 13.8 VDC.** Perfect for mountain-top DXpeditions!
- **The mode switches confirm USB, LSB, CW, or FM selection with Morse Code.**
- **Dual Watch allows reception of two bands at the same time.**
- **Automatic mode and automatic repeater offset selection.**
- **Direct keyboard frequency entry.**
- **59 multi-function memory channels.** Store frequency, mode, tone information, offset, and quick step function. Ten memory channels for "odd split."
- **CTCSS encoder built-in.** Optional TSU-5 enables sub-tone decode.
- **Memory scroll function.** This feature allows you to check memory contents without changing the VFO frequency.
- **Multiple scanning functions.** Memory channel lock-out is also provided.
- **ALT—Automatic Lock Tuning—on 1200 MHz eliminates drift!**
- **500 Hz CW filter built-in.**
- **Packet radio terminal.**
- **Interference reduction controls:** 10 dB RF attenuator on 2m, noise blanker, IF shift, selectable AGC, all mode squelch.
- **Other useful controls:** RF power output control, speech processor, dual muting, frequency lock switch, RIT.
- **Voice synthesizer option.**
- **Computer control option.**

Optional Accessories:

• **PS-31** Power supply • **SP-31** External speaker • **UT-10** 1200 MHz module • **VS-2** Voice synthesizer unit • **TSU-5** Programmable CTCSS decoder • **IF-232C** Computer interface • **MC-60A/MC-80/MC-85** Desk mics • **HS-5/HS-6** Headphones • **MC-43S** Hand mic • **PG-2S** Extra DC cable



Complete service manuals are available for all Kenwood transceivers and most accessories. Specifications, features, and prices are subject to change without notice or obligation.

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- **Volume and balance controls, plus separate squelch controls on top panel.**
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- **Automatic offset selection on 2 meters.**
- **Tone alert system for quiet monitoring.** When CTCSS decode is on, the tone alert will function only when a signal with the proper tone is received.
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- **Automatic battery saver circuit extends battery life.**

Supplied accessories: Dual band rubber-flex antenna, PB-6 battery pack, wall charger, belt hook, wrist strap, water resistant dust caps.

Optional Accessories

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THE CRRL BOOKSHELF

STUDY MATERIALS

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Canadian Amateur Licensing Manual		$18.75	$17.00	100	$1.50 ☐
Canadian Amateur Question Bank		10.00	9.00	112	.75 ☐
Canadian Amateur Regulations Book		10.00	9.00	190	.75 ☐
Canadian Amateur Code Tapes	(OT)	38.00	34.25	200	2.50 ☐
Canadian Advanced Question Bank		10.00	9.00	116	.75 ☐
Banque de questions premiere		10.00	9.00	113	.75 ☐
Banque de questions superieur		10.00	9.00	117	.75 ☐
First Steps in Radio, W1FB		8.00	7.25	470	.75 ☐
Premier pas en radio, W1FB (RAQI)		8.00	7.25	F900	.75 ☐
Operating an Amateur Radio Station		1.25	1.25	300	1.00 ☐

CRRL INSIGNIA

Lapel Pins	(OT)	3.00	3.00	130	.75 ☐
Large Cloth Diamond (5")	(OT)	3.00	3.00	141	.75 ☐
Small Cloth Diamond (3")	(OT)	2.00	2.00	151	.75 ☐
ARES Circular Patch (4")	(OT)	4.00	4.00	161	.75 ☐
Set of 3 CRRL Logo Decals	(OT)	1.00	1.00	180	.75 ☐

OPERATING AIDS

1990 North American Callbook	(OT)	35.00	31.50	721	2.00 ☐
1990 International Callbook	(OT)	37.50	33.75	711	2.00 ☐
Chicken Junction Directory	(OT)	15.00	13.50	780	1.50 ☐
Log Book	(OT)	3.50	3.00	121	.75 ☐
Super Log Book	(OT)	5.75	5.00	125	.75 ☐
Radiogram Forms	(OT)	2.00	1.75	170	.75 ☐
1989 ARRL Repeater Directory	(OT)	7.00	6.00	193	.75 ☐
Grid Locator for North America	(OT)	2.00	1.50	800	.75 ☐
DXCC Countries List	(OT)	2.00	1.50	812	.75 ☐
1989 Net Directory	(OT)	2.00	1.50	823	1.50 ☐
ARRL World Map	(OT)	13.50	12.25	840	2.50 ☐
Callbook Prefix Map of the World	(OT)	8.50	7.75	RA10	*3.50 ☐
Callbook Prefix Map of N America	(OT)	8.50	7.75	RA11	*3.50 ☐
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ANTENNA BOOKS

	NON MEMBER	MEMBER	STOCK #	POSTAGE ✓
ARRL Antenna Book	$24.00	$21.50	411	$1.50 ☐
RSGB HF Antennas for All Locations	21.25	19.00	330	1.00 ☐
Antenna Compendium #1	15.75	14.25	420	.75 ☐
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All About Vertical Antennas	13.25	12.00	RP120	1.00 ☐
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Operating Manual	21.00	19.00	522	1.50 ☐
Complete DXer	15.75	14.25	440	.75 ☐
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1990 ARRL Handbook	29.00	26.00	495	2.00 ☐
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All About VHF Amateur Radio	14.50	13.00	RP130	1.00 ☐
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Computer Network Conference #8	15.00	13.50	603	1.00 ☐
Gateway to Packet Radio	14.00	12.50	900	.75 ☐

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Section News/Nouvelles des Sections

Conducted By Jack Strangleman, VE3GV

The CRRL Field Organization Forum

Reports invited: CRRL Section Managers (SMs) and their Section-level assistants coordinate traffic handling, emergency communications and bulletin service across Canada. Your SM (name and address appears on page 2 of this *QST Canada*) welcomes reports of individual and club activities for publication in this column. Activities do not have to be related to the CRRL Field Organization or to CRRL.

SECTION MANAGER ELECTION RESULTS

Congratulations to Ernie Savage, VE7FB, who was recently re-elected CRRL British Columbia Section Manager. Ernie is a bit like Wayne Gretzsky—he holds the record. He's the longest surviving Section Manager in either CRRL or ARRL. Ernie held the post shortly after World War 2, came back to it in 1962, and has been British Columbia Section Manager ever since.

REPORTS FOR SEPTEMBER 1989

Alberta: SM/STM/DEC: Bill Gillespie, VE6ABC; ASM: VE6AMM; SEC/TC: VE6AFO; OO: VE6TY. The fall season has arrived and Amateur Radio classes are under way in various parts of Alberta. Band conditions are up and down but showed some improvement over August. Hopefully, the winter season will be better. I have just returned from two weeks in the Orient, so am not yet caught up on local happenings.

British Columbia: SM: Ernie Savage, VE7FB. British Columbia Public Service Net (BCPS, phone) meets daily at 0200 UTC on 3729 kHz. General net business is followed by a check-in session. Net Manager: Jim, VE7JN; Assistant Net Manager: Ford, VE7DDF. Net activity: Check-ins: low–137; high–170, and total–4100. British Columbia Emergency Net (BCEN, CW) meets daily at 0600 UTC on 3651 kHz. Code speed is 10 wpm, though traffic is handled at *your* speed. Often there is someone on the frequency at any time of day. BCEN is a member of NTS and checks into RN-7 nightly. Net Manager Ferdie, VE7EJU, reports things are slow. We *are* glad to see new members reporting their traffic activities. Please, also include your phone traffic in your reports. Thanks to our NCs: VE7s ANG, AVA, BCF, EJU, ESA, FME and FRZ.. We need four more and a spare. Volunteers? Vancouver's new friendly repeater is VE7YVR, 145.49 MHz (-). Thanks, YVR Communications Group.

Manitoba: SM: Jack Adams, VE4JA; ASM:VE4IX; SEC: VE4TM; ATC: VE4ADP; NMs: VE4LB, VE4IX, VE4TE. Radio-wise, things have been quiet at your SM's QTH. Decided to move the shack to a bigger room. What a job! Would have been easier to take my treasures to the Brandon ARC Fleamarket. I missed it this year, but was told that most came by, though few brought anything to sell. Something like going to a cattle auction where no one brings the beef. Anyways, all our systems should be go by Thanksgiving. Recently purchased an IBM-compatible Lazer XT/3 with colour monitor and 24-pin printer. Packet station should be in full swing shortly. ARES is only as good as the people who make it. Your SEC, Rod Kischook, VE4TM, would like to hear from amateurs in various communities who would like to become ECs. Rod thanks all who helped out in the emergency evacuation of northern residents during the forest fire hazard this past summer. Hopefully, by the time this report is printed, we will have the Neepawa repeater. Are you a member of Winnipeg Repeater Society? If not, we need your help to link repeaters to talk from Vancouver to Toronto on 2 metres. With you as a member, it can become a reality.

Maritimes-Newfoundland: SM: Carl Anderson, VE1UU; ASM: Ned Mulrooney, VO1MN; STM: Mel Lever, VE1VX; BM: Brent Taylor, VE1APG; EC (NB) Brian Upton, VE1ZJ. From now on, new Amateur Radio station licences issued to Prince Edward Island amateurs will have call signs beginning with VY2. Holders of current station licences may adopt the VY2 prefix (retaining their present suffix) simply by applying to the DOC regional office in Moncton. No PEI amateur is required to change his or her call sign, but can remain VE1. New Brunswick and Nova Scotia amateurs did not express a majority wish for a change, and remain VE1. The CRRL VE1 Incoming QSL Bureau will continue to serve all VE1/VY2 amateurs. PEI amateurs and island visitors: Don't miss Charlottetown ARC's breakfast meetings at Gentleman Jim's in the Charlottetown K-Mart Plaza, 0900 AST/ADT, Tuesdays, Thursdays and Saturdays. Congratulations to Slemon Park ARC (CFB Summerside, PEI) whose radio course produced at least nine new amateurs. Halifax ARC is running a course this fall and winter with about 35 in attendance. Other radio clubs, please let your SM know about your Amateur Radio courses and what success you are having. Shelburne ARC officers are Norm Hamilton, VE1BBC, president; Keith Williams, vice president; and Harold Blaknet, VE1BLK, secretary-treasurer. Thanks for the info, Harold. For much of the above, I am indebted to Tom, VE1CES, for copies of newsletter he receives from various clubs. I would like your club's current roster of officers for this column—and items about noteworthy activities you or your club are engaged in. Packet me VE1UU @ VE1EI. Thanks in advance! Finally, the holiday season is coming! Best wishes to all radio amateurs in the Maritimes-Newfoundland Section for a Merry Christmas. May 1990 be your best year ever.

Ontario: SM: Larry Thivierge, VE3GT; BM: VE3GSA; SEC: VE3GV; STM: VE3CYR; TC: VE3EGO. The rescue of an injured American woman from the central part of Isle Royale in Lake Superior might not have been possible if it had not been for the efforts of members of Thunder Bay's Lakehead ARC, especially VE3HQL and VE3EBL. The woman broke her arm while hiking and was discovered by an amateur who was also hiking. The amateur, Robert Pirkel, walked 6.5 km up a mountain trail and used his handheld transceiver to call Thunder Bay for help. Radio contact between Isle Royale and Thunder Bay lasted about two hours while preparations for rescue were being made. The woman was picked up and taken to a Michigan hospital by a Thunder Bay air ambulance helicopter. Algoma ARC (Sault Ste-Marie) sponsors the Friendly Borders Award. Details are available from Awards Manager, VE3SDX. Algoma ARC also operates two repeaters in the Sault Ste-Marie area: VE3SSM and VE3SJI. It looks like an active winter on ATV in the London area with some 20 amateurs with down-converters and antennas for their new split-band ATV repeater. VE3SB has been bitten by the packet bug and is having a lot of fun. VE3TRW presented VE3ACY with the first QSL (#1) issued by Environment Canada for the Weatheradio Canada station. VE3AVS, VE3HTM and VE3LMV are returning as teachers for Lakehead ARC amateur classes. VE3NGR and VE3NGO are both sporting new TS-440s. Watch out for Kenwood's new TS-950SD. VE3SJO is now K8MQN. VE3EZJ is now VE3EFM. New appointments in the Section are OBS: VE3JPP, VE3KLX and VE3WHT; and EC (Prince Edward County): VE3KKX. The Waterloo-region magazine *New Era* contained an interesting article on VE3BCZ who, in addition to being an active amateur, is a folksinger, puppeteer, librarian, professor and administrator. The menu of his life is lengthy! New members of Niagara Peninsula ARC are VE3TEC, VE3WGE and VE3WWG. New amateurs are VE3CIM, VE3WPD and VE3YYF. VE3IJZ, VE3NPS and VE3XRC have their Advanced. On behalf of everyone in the Ontario Section field organization, may I wish all of you a very Merry Christmas and every good wish for the New Year, 1990.

Quebec: SM: Harold Moreau, VE2BP; STM: VE2EDO; SEC: VE2LYC; BM: VE2ALE. The Drummondville Hamfest on September 30 drew almost as big a crowd as the Sorel Hamfest did in May. Félicitations à tous les membres du club de Radio Amateur de Drummondville, qui ont réussi avec succes le hamfest, le 30 Septembre. Le club de Ste-Hyacinthe à une vingtaine de candidats qui participent aux cours de Radio Amateur.

Saskatchewan: Bruce Rattray, VE5RC. It's October 6 and we are slowly but surely slipping into the bonds of winter. Now is the time for all good amateurs to come to the aid of antenna parties. Congratulations to the new Saskatchewan CRRL volunteer team of Gord, VE5GF, Section Bulletin Manager; Bob, VE5FY, Section Emergency Coordinator; and Erwin, VE5ELJ, Section Traffic Manager. I had a pleasant surprise the other day when VY1FF broke in on 20 metres. Turned out it was Gerrard, ex-VE5FF, formerly of Prince Albert and now in Whitehorse with his XYL, Doreen, and two harmonics. The entire family will be visiting Regina in December. Packet Radio is alive and well in Saskatchewan. There is a new packet digipeater in Aylsbury: VE5AY-3 K-node can be reached via VE5GF or VE5ARG. I understand some problems on the Aylesbury-Hanley path need to be worked out. All local radio clubs are back in full swing. If you don't belong to one, join. It's only through a united front that our hobby will survive the commercial pressures it faces every day, month and year. Hope everyone had a great Thanksgiving and that you were able to be with your family. I know the turkey here will never fly again! 73 and Merry Christmas and Happy New Year from Bruce and Bonnie. ■

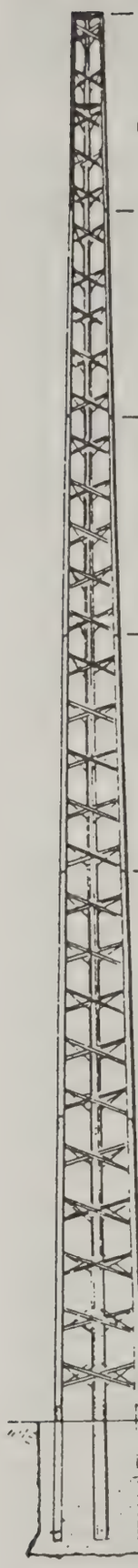
Silent Keys

Conducted By Ray Staines, VE3ZJ

It is with deep regret that we record the passing of these amateurs:

VE3AGS, Wesley E Lawford, Toronto, ON
VE3ATJ, Don Reavely, Ottawa, ON
VE3BXL, Tom McClennan, London, ON
VE3PZ, Howard Matthews, Guelph, ON
VE6BL, Bill Wood, Grand Prairie, AB
VE7AHK, Harold Irish, North Vancouver, BC

Note: Silent Key reports sent to *QST Canada* must include name, address and call sign of reporter in order to be listed. To avoid unfortunate errors, reports are confirmed only through acknowledgement from the family of the deceased. Thus, those who report a Silent Key may not receive an acknowledgement from *QST Canada*. ■



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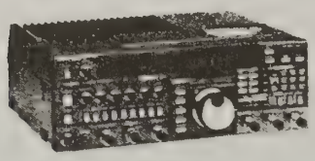

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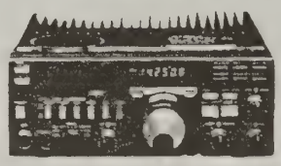

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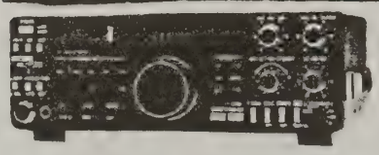

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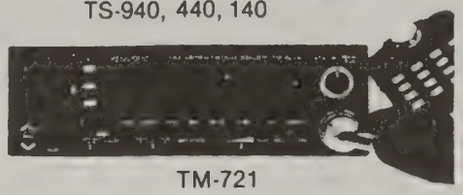

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Didn't *You* Get It?

Didn't *you* get it? Everyone in class *has* paid attention, and *understands* all that great new technical information that you covered during the evening. I mean, haven't you been very clear in your explanations and handled all the questions that your inquisitive students have dropped on you? I mean, you have covered the same material for dozens of years and it is crystal clear in your mind, so there should be no problem. Well, all of us who attempt instruction in a technical field do tend to get caught up in our theory and sometimes we make some very bad assumptions about the absorption rates of the students facing us in Ham Class 101. Keep in mind that the great majority of those aspiring amateurs do not have a technical background. They do not intend to service their amateur equipment or trace faults in their PCs.

Those of us instructing Amateur Radio classes must "get them up to speed" and make sure that an appreciation for and an understanding of electronics does occur. One thing to keep in mind while preparing for and instructing your group is that each student will learn a lesson more quickly and retain the knowledge if the material is presented in the right style for that person. Holy smokes! That means ten styles for ten students! In theory that is correct, but we have to strike a happy medium or else we would never finish the simplest lesson. All students should have some kind of text. Thus, those who learn through reading are already covered. You are going to be doing a lot of "lecturing" and maybe even some board (never bored) work, so those who like to listen and watch will be picking up their information then. I bet we have covered a lot of the class by now. However, let's verify the theory and provide some proof that all the abstract and invisible things that we accept in electricity really do work.

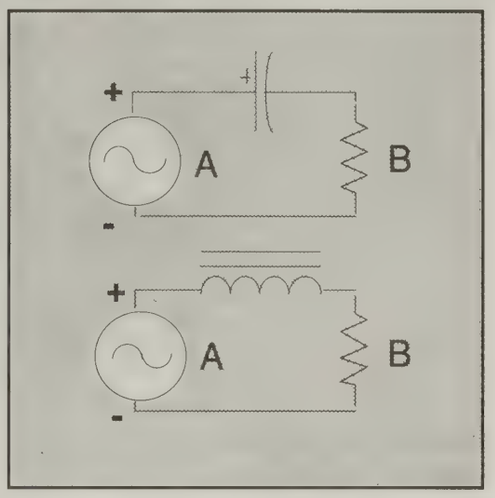
Demonstrations

Some students must "see it work" and will then ask questions in order to understand and remember new concepts. The demonstration of a working model, whether a machine or an electric circuit, will add that little extra to a lesson and helps everyone. In an earlier column, I listed the basic equipment you would need for demonstrations. This list included a 'scope, and audio generator, and some capacitors, inductors and resistors. In some cases a TVM, or DVM could be used for ac measurements as long as waveform analysis wasn't required. These instruments could be substituted for the 'scope. Let's assume you have discussed capacitors and dc and have demonstrated charge and storage by suitable flashes and bangs! By now that student is aware that the capacitor and inductor have an ability to store different forms of energy when dc is applied. After reading about capacitors and inductors in ac circuits, and giving your "best ever" lecture on reactance, everyone is ready for a demonstration.

Reactance and stuff

To demonstrate capacitive reactance, use a simple RC series circuit with a 1-kΩ resistor, and an 0.01-μF capacitor, and an audio generator as the source of emf. (See the diagram.) The best setup would use a dual-beam 'scope, with one channel (A) looking across the generator and the other channel (B) looking across the resistor. The generator is set at a frequency of about 16 kHz and adjusted for about 10 volts peak-to-peak as shown on channel A. Now channel B should indicate about 5 volts peak-to-peak. (Remember, C and R are acting as a voltage divider). Now, change the generator frequency to 100 Hz and make sure channel A is still at 10 volts peak-to-peak. Observe channel B. The very low value is because of the reactance of the capacitor. Now increase the frequency of the generator slowly and let the students observe the output (voltage across the resistor). Have the students record the output at various frequencies. Remind them of Kirchhoff's voltage law and have them estimate the "reactance" of the capacitor, based on the ratio of applied voltages: the voltage across the resistor and the calculated voltage drop across the capacitor. What they're seeing is the reactance changing as the frequency of the applied signal changes. Again, change the frequency and observe the output and the apparent opposition to the flow of ac current at different frequencies.

To demonstrate inductive reactance, use a simple LC series circuit with a 1- to 5-henry inductor and a 1-kΩ resistor, and the same audio generator as source. (Again, see the diagram.) The inductor should be chosen for lowest resistance (that's a dc measurement!) if you have a choice of several fleamarket specials. That's where I get most of my demo samples. Channel A looks across the generator (10 volts peak-to-peak) and channel B across the 1-kΩ resistor. I would start at 30 Hz. Now increase the frequency of the generator, maintaining a constant input, and watch the output voltage fall. The voltage drop can be attributed to the action of the voltage divider again, but this time the reactance is increasing with frequency and so a greater voltage drop occurs across the inductor, and less appears at the output, channel B.



We will use the same components to demonstrate resonance and "Q" in our next column. 73. ■

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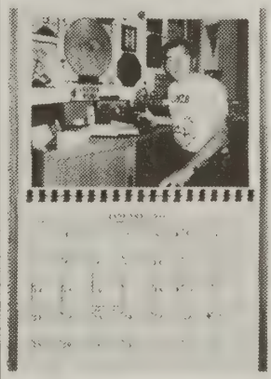

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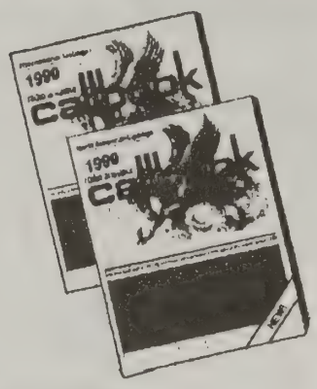

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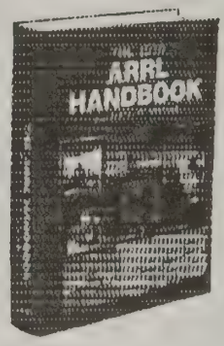

This is the most comprehensive edition since the **Handbook** was first published in 1926. The sixty-seventh edition contains over 1200 pages and over 2100 tables, figures and charts. Added to this edition are new antenna projects including three high-performance Yagis for 144, 220 and 432 MHz designed by Steve Powlishen, K1FO. Dick Jansson, WD4FAB, has completely revised the space communications chapter, which includes his innovative helical array for AO-13 Mode L.

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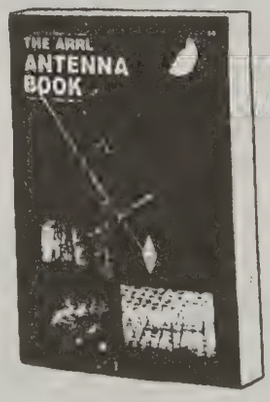

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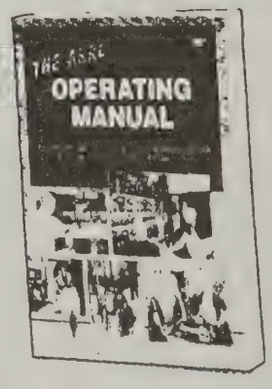

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ing made, from time to time, to increase this value.

The receiver at 9BP is a Paragon RA-10 regenerative tuner with a Paragon DA two-stage audio amplifier.

There is nothing unusual about the antenna. It is of the conventional inverted-L type consisting of a cage 75 feet long and 63 feet high for the top part, with a lead-in 45 feet long. A counterpoise of 12 wires 85 feet long and fanned somewhat is located directly beneath the antenna.

For some years Jack Barnsley has been more or less connected with radio. He was first bitten by the bug in 1910 and now laughingly relates how his first set consisted of a bit of haywire, a homemade coil and detector, and a telephone receiver borrowed from one of Mr. Bell's telephones. It was in 1914 that he started out as a commercial operator and worked on all of the coasting steamers operated by the Union Steamship Co. of B. C., Ltd. He then made several trips across the Pacific, joined the Royal Air Force during the war, and finally returned to Prince Rupert where he is now agent for the Union Steamship Co.

In recognition of his splendid accomplishment of being the only amateur station to successfully communicate with WNP after a long period of silence, he was presented by the Chicago Radio Laboratory with a complete Zenith receiving set, which he prizes highly.

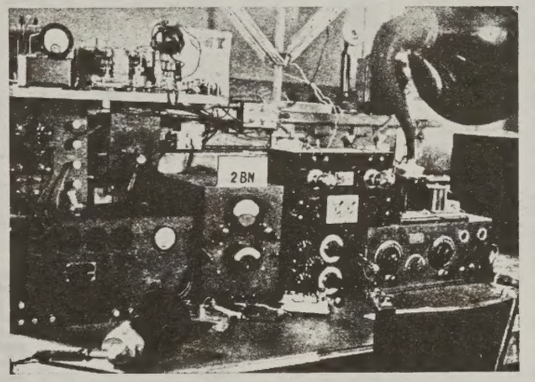
2BN, MONTREAL, QUE.

Canadian 2BN is another station whose signals are consistently heard over the greater part of the United States and Canada. The operator is Mr. J. L. Miller,

2BN Has Three More Walls Like This.

who has had considerable experience as a commercial operator and handles traffic in good style.

There are two transmitters and two receivers at this station. In the upper left-hand corner of the photo is the transmitter that utilizes one 40-watt (input) French tube, arranged in bread-board fashion. 1500 volts of chemically rectified current is supplied the plate circuit of this transmitter. The note is smoothed somewhat by a 5-microfarad condenser across the line although it is not pure D.C. Although this set has only been in a short time it has been heard at points 1500 miles distant on several occasions.



Canadian 2BN

The other transmitter, shown on the left of the table in the picture, is a Westinghouse TF set using four 5-watt tubes for C.W.; or, two as oscillators and two as modulators for phone. The antenna current is 3.4 amperes on C.W. This transmitter is the one mostly used and has been heard in all districts of the United States and Canada. Plate current is furnished through a Kenotron rectifier system which may be seen just to the right of the TF transmitter in the picture.

On the table to the right of the picture is a Reinartz receiver and next to it a single-circuit receiver with a stage of audio amplification. A Magnavox power amplifier and loud speaker may be seen above this.

There is nothing unusual about the antenna system at 2BN for it is of the conventional flat-top inverted-L type, 65 feet high and 75 feet long with a counterpoise suspended beneath it.

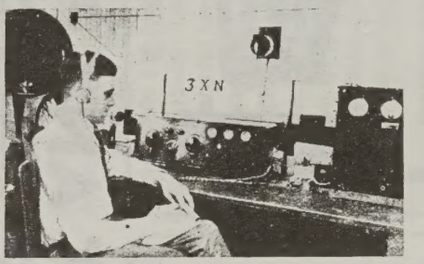
3XN—9CF, LONDON, ONT.

The first C.W. set at 3XN-9CF used two 5-watt tubes with 10 volts on the filament, 1000 volts on the plate and 4.9 amperes in the antenna. This transmitter lasted one month! The present set uses two 50-watt tubes in a Hartley circuit, with 2000 volts of chemically rectified 25-cycle juice on the plates. The antenna

Canadian Stations—continued from page 1

current is 4 amperes with 200 mils on the plates. The best transmissions have been made to France, Porto Rico, Hawaii, and the S. S. China when 1100 miles west of San Francisco.

The receiver is a Reinartz set with three stages of audio amplification. One stage,



of course, is sufficient for most work.

Turning to the radiation system, the antenna is an inverted L, 60 feet long and 55 and 40 feet high at the ends. It consists of two 4-inch cages with six wires in each cage. A network of wires, fifty by twenty feet, and fifteen feet high forms the counterpoise.

Mr. C. H. Langford, the owner of the station, is prominent in Canadian amateur radio. He is City Manager for the A.R.R.L., Government Radio Inspector, and also sells radio apparatus. He is always willing to check any station's wave length as the Government has furnished him with a good wavemeter for this work.

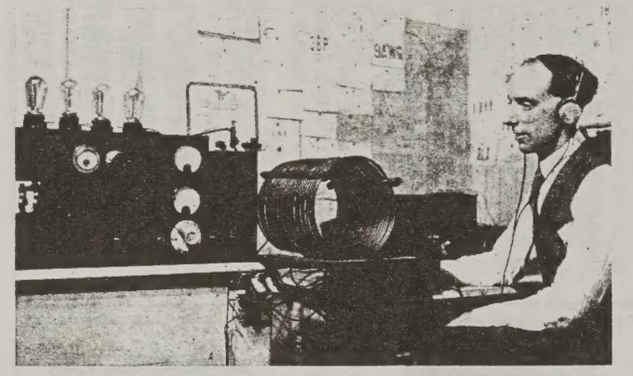
1AR, DARTMOUTH, N. S.

Clear across the continent from 9BP is station 1AR; another of Canada's better amateur stations. 1AR is situated at Dartmouth, 100 miles east of the eastern tip of Maine, near Halifax. Mr. Joseph Fassett, who runs the station, has long been in the radio game and still refers occasionally, with a smile, to the magnetic detectors and other crude apparatus used in the early days.

It was a great surprise to learn that his transmitter employs only four 5-watt tubes. The familiar Hartley circuit is used and most of the parts are homemade, including the transformers, grid leaks, tuning inductances, blocking condensers, and filter chokes. An electrolytic rectifier of 20 one-quart jars supplies current to a filter consisting of a 50-henry choke with a 4-microfarad condenser across the rectifier side of the supply and a 2-microfarad condenser across the supply next the plates.

The receiver is a three tube regenerative set using "peanut tubes" run from dry batteries and performs very satisfactorily.

The antenna system consists of a flat-top 55 feet high at the far end and 25 feet high at the lead-in end. This flat top is 100 feet long and 12 feet wide. The



Canadian 1AR

counterpoise is 100 feet long, 15 feet high and is also 12 feet wide, located directly under the antenna. Both the antenna and counterpoise are carried directly to the walls of the house where the set is located and thus there is practically no lead-in. Because of the high antenna capacity the normal current in it is around six amperes.

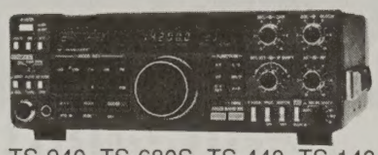
Mr. Fassett now has a 500-watt tube and in a very short time expects to have it on the air and receive signal report cards from the greater part of the world. He tells us that his station is not much for looks, but we know from the way he comes in that it is built with the idea of getting results; and it sure does!

(Concluded on page 62)

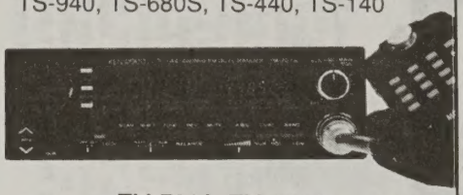
Canadian Stations—continued on page 20

December/decembre 1989 17

KENWOOD

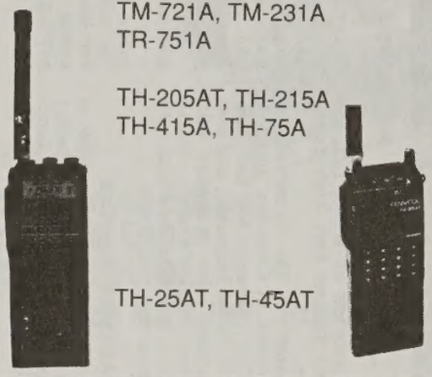


TS-940, TS-680S, TS-440, TS-140



TM-721A, TM-231A
TR-751A

TH-205AT, TH-215A
TH-415A, TH-75A



TH-25AT, TH-45AT

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42-MONTH LEASE—$137.54 PER MONTH

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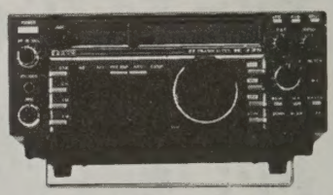

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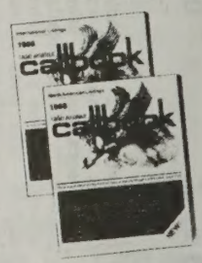

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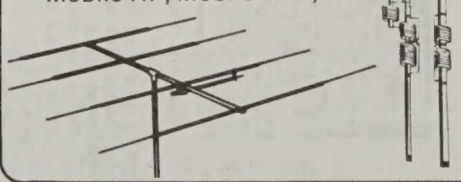

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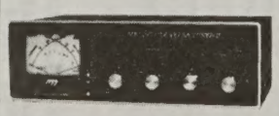

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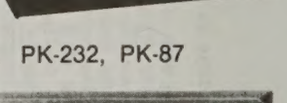
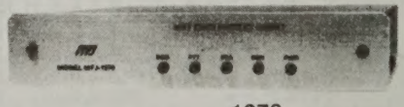


AEA PK-232, PK-87



1278

MFJ 1270B, 1274, 1278

Conducted By Jack Strangleman, VE3GV
and Bob Boyd, VE3SV

Working with Volunteers

At the suggestion of Ken Oelke, VE6AFO, EC for Calgary District and CRRL's Midwest Director, we'll be covering some of the contents of the *Emergency Coordinator's Manual* in this and subsequent columns. The *Manual* was published some years ago by the ARRL for the guidance of ARES ECs and AECs. This month we'll look at the subject of working with volunteers, with quotations from the *Manual.*

"Volunteers are the lifeblood of ARES. They are difficult to find, more difficult to keep, and at times, difficult to work with. Volunteers come in a wide variety of shapes, colours, sizes, backgrounds, skills, experience and levels of motivation. They have their own reasons for participating and their own specific needs which must be met if they are to continue to volunteer. Their needs, abilities and accomplishments determine the ultimate success or failure of ARES. The task of the EC is to discover and meet their needs while guiding them in the best use of their abilities, thus helping them to achieve significant accomplishments in public service.

"Volunteers are individuals who are willing to work with others to perform a necessary public service. They are human beings with human needs, goals, attitudes, strengths and weaknesses. Since volunteers will be the basic resource of the ARES group, it will be to the advantage of the EC to get to know each of them as well as possible.

"Generally, volunteers will do precisely what the EC wants them to do—no more, no less. It is up to the EC to convince them that the assignment selected for them is both needed and appropriate. Having their own likes and dislikes, it may be necessary to talk the volunteers into some assignments which are important though unpopular. Volunteers must be convinced that what they are being asked to do is really needed. Volunteers don't like to be underutilized, and tend to disappear when kept cooling their heels for a significant length of time. They will work for long hours under the worst conditions as long as *they* can see a need for it. Most will do anything you ask, as long as they're treated properly. If they are mistreated or abused, they may not volunteer their help again."

Why do they volunteer? The majority join out of a desire to serve the public in the way they best know how: as communicators.

"Volunteers have a right to expect courteous, considerate, fair and impartial treatment from the EC. Courtesy is always in order; rudeness will cost dearly. In addition to learning and compensating for their weaknesses, and being tolerant of their faults, the EC must also consider their feelings. Never forget that ARES is taking precious time from their families.

"Unfortunately, some members will expect much more of the EC than they have a right to expect, and often more than can be given. They may expect the EC to change situations over which the EC has no control, force other volunteers to change their habits, provide them with privileged treatment or status, fire a useful assistant because they happen to dislike the person, and other equally inappropriate actions.

"Each member has different job demands and family requirements, as well as other outside interests. This affects

Field Organization Reports September 1989

CRRL Section Emergency Coordinator Reports

Reports were received from the following SECs (DECs and ECs reporting to SECs are listed in brackets) denoting a total ARES membership of 812.

Reporting	ARES Members
VE3GV (VE3s EFX, FOB, FUN, GMU, GNW, HSF, JJA, KXB, LKI, LPM, LYW, KBU, MB, OZT, TNL)	570
VE4TM	–
VE6AFO (VE6s AMM, XD)	242

CRRL Section Traffic Manager Reports

Call	Orig	Rcvd	Sent	Dlvd	Total
VE1ALU	1	12	13	0	26
VE1ADJ	1	8	0	9	18
VE1DLC	1	8	7	10	17
VE1IH	3	7	0	7	17
VE2BP	3	17	16	12	48
VE2WH	2	14	12	14	42
VE2JN	0	7	6	6	19
VE2ALE	0	2	2	0	4
VE3GT	2	55	93	0	150
VE3ORN	7	45	79	8	139
VE3ISD	2	56	62	10	130
VE3CYR	0	70	41	2	113
VE3GSQ	0	50	30	1	81
VE3BCZ	3	31	34	2	70
VE3GNW	0	20	34	0	70
VE3IN	1	35	3	7	46
VE3EAM	3	12	3	12	30
VE3SB	0	13	17	0	30
VE3KCZ	1	12	11	2	26
VE3EUI	0	13	8	4	25
VE3NVJ	4	7	9	3	23
VE3BDM	0	3	17	0	20
VE3DVE	0	6	11	2	19
VE3AJN	0	6	4	0	10
VE3BAJ	0	1	4	0	5
VE4JA	16	59	26	18	119
VE4JR	0	15	15	6	36
VE4LB	0	20	10	3	33
VE4STU	3	16	10	3	32
VE4TE	0	20	7	0	27
VE6CPP	-	-	-	-	25
VE6GUS	-	-	-	-	9
VE6ABC	-	-	-	-	8
VE6AKY	-	-	-	-	3
VE6QT	-	-	-	-	1
VE7EJU	3	88	51	2	144
VE7ANG	3	27	45	2	77
VE7OM	3	18	6	16	43
VE7BCL	4	14	66	10	34
VE7XA	0	6	24	4	34
VE7FRZ	2	9	22	0	33
VE7FME	2	7	11	1	21
VE7BCF	4	2	4	2	12
VE7FB	1	5	5	1	12
VE7BZI	1	4	1	4	10
VE7EGM	1	1	4	0	6
VE7CCJ	1	1	1	0	3

National Traffic System

Net (Mgr)	Sess	QNI	QTC
APN (VE1BKM)	22	72	62
KTN (VE3AJN)	13	95	109
OLN (VE3POJ)	25	421	25
OPN (VE3IN)	30	518	165
OQN-1 (VE3GSQ)	12	19	17
OQN-D (VE3ORN)	22	66	19
OQN-E (VE3CYR)	29	118	94
OQN-L (VE3GSQ)	22	62	19
MTN (VE4IX)	15	120	15
MEPN (VE4LB)	28	849	19
MWX (VE4TE)	30	311	29
APSN (VE6AKY)	30	701	4
ATN (VE6CPP)	30	257	71
BCEN (VE7EJU)	30	628	128

Brass Pounders' League

This listing is available to amateurs who report to their SM a traffic total of 500 or a sum of originations and delivery points of 100 or more for any calendar month. All messages must be handled on amateur frequencies, using standard ARRL-CRRL form, within 48 hours of receipt.

BPL: None this month

Public Service Honour Roll

This listing is available to amateurs whose public service performance during the month indicated qualifies for 60 or more points in the following nine categories (as reported to their SM). Please note maximum points for each category: (1) Checking into CW nets, 1 point each, max 30; (2) Checking into phone/RTTY nets, 1 point each, max 30; (3) NCS CW nets, 3 points each, max 12; (4) NCS phone/RTTY nets, 3 points each, max 12; (5) Performing assigned NTS liaison, 3 points each, max 12; (6) Delivering a formal message to a third party, 1 point each, no max; (7) Handling an emergency message, 5 points each, no max; (8) Serving as an EC or NM for an entire month, 5 points max; (9) Participating in a public-service event, 5 points each, no max. Amateurs who qualify for Public Service Honour Roll 12 consecutive months, or 18 months out of a 24-month period, will be awarded a special certificate from CRRL Headquarters.

PSHR: VE4JA (124), VE3ORN (117), VE4LB (111), VE3GT (80), VE4STU (80), VE3BDM (75), VE4IX (72), VE7EJU (68), VE3CYR (66), VE4JR (65), VE4TE (56)

Service and Specialized Nets

Independent Net Managers: Your monthly reports are welcomed. Send to CRRL, Box 7009, Station E, London, ON N5Y 4J9.

Net (Mgr)	Sess	QNI	QTC
ARES CANADA (VE3GV)	4	88	0
ARES ONTARIO (VE3GV)	1	4	0
CRRL ONTARS (VE3FQV)	30	9868	0
TRANS-PROVINCIAL (VE3EUI)	30	5864	0
ARG (VE5EE)	26	543	0
MJARC (VE5MML)	28	312	0
SWX (VE5EX)	30	718	0
SPN (VE5AE)	28	1095	11

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